

# VCStack - Network Design Options



the solution : the network

# Introduction

The Allied Telesis resilient network solution for small and medium enterprises is created by the innovative combination of Virtual Chassis Stacking (VCStack™) and Link Aggregation. The advantages of this solution are presented in the “VCStack - Powerful Simplicity” technology solution, and an example configuration is detailed in the “VCStack x900 Tested Solution”. Both of these documents are available on the Allied Telesis website:  
[alliedtelesis.com/library/solutions](http://alliedtelesis.com/library/solutions)

This solution is not tied to a particular set of products, or to a specific connectivity design. The flexibility of the solution, and the integrated nature of the Allied Telesis product range, mean that the solution can be realized in multiple incarnations to meet different price points and performance requirements.

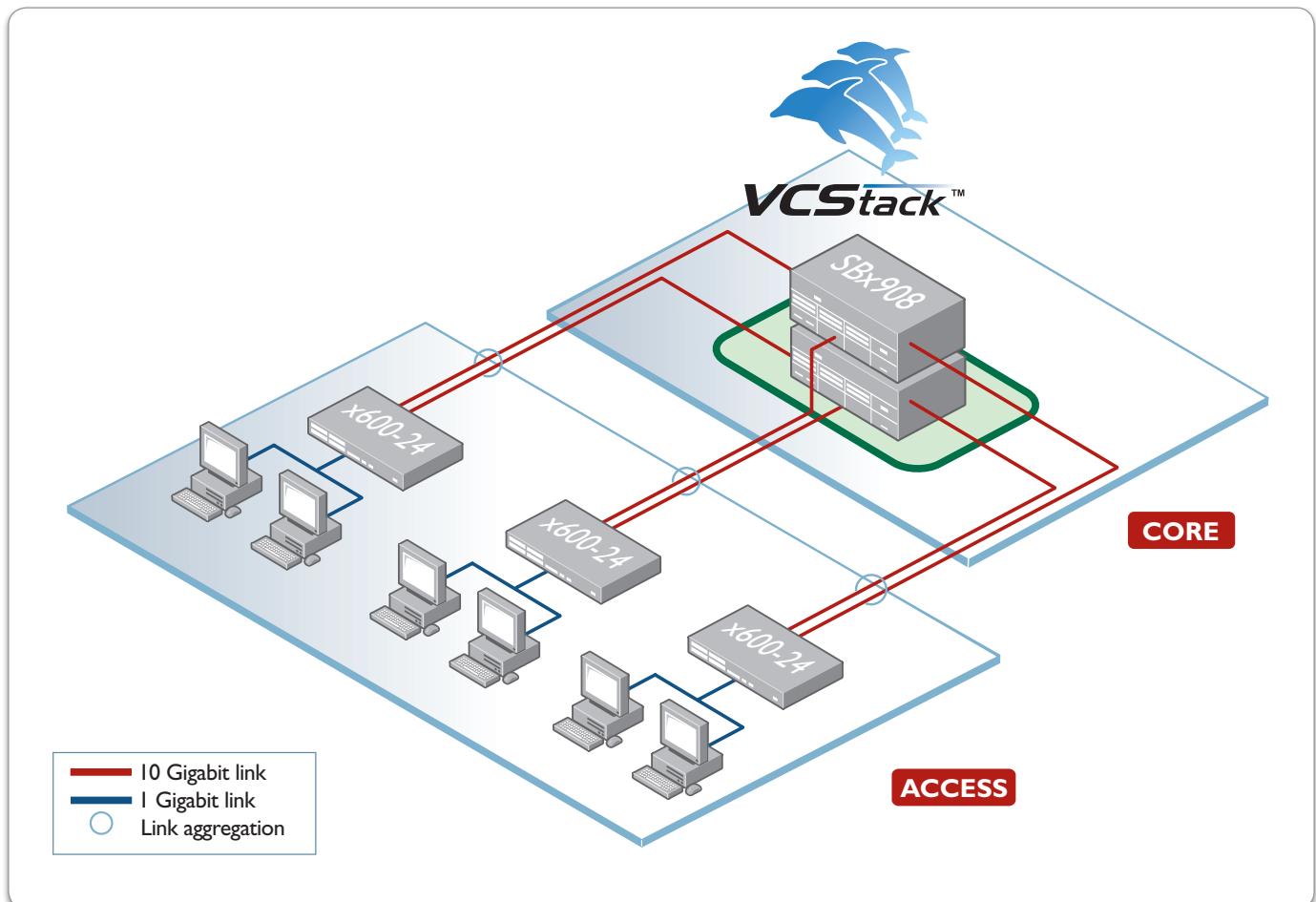
A number of factors must be considered when deciding upon a network design and the products with which to realize that design:

Gigabit to the desktop	vs 10/100 to the desktop
PoE	vs non-PoE
Copper	vs Fibre
Non-blocking	vs Blocking Ratio
L3 at the edge	vs L3 only in the core
Intelligence right to the edge	vs Intelligence to the aggregation layer
Dual PSU on core units	vs Single PSU on core units
High speed core stacking	vs Medium speed core stacking

The Allied Telesis LAN switch product range has been designed to offer options that allow multiple combinations of all these factors. As a network architect, you are not locked into a narrow set of options. You have the flexibility to create a network design that fits your needs, instead of being restricted by arbitrary vendor-imposed constraints.



# Option 1: High performance gigabit to the desktop



Option 1: High performance gigabit to the desktop

#### Product combination:

- » AT-x600-24Ts/XP at the access layer
- » AT-SBx908 virtual chassis core

#### Connectivity:

- » Aggregated pairs of 10 gigabit links from Access to Core

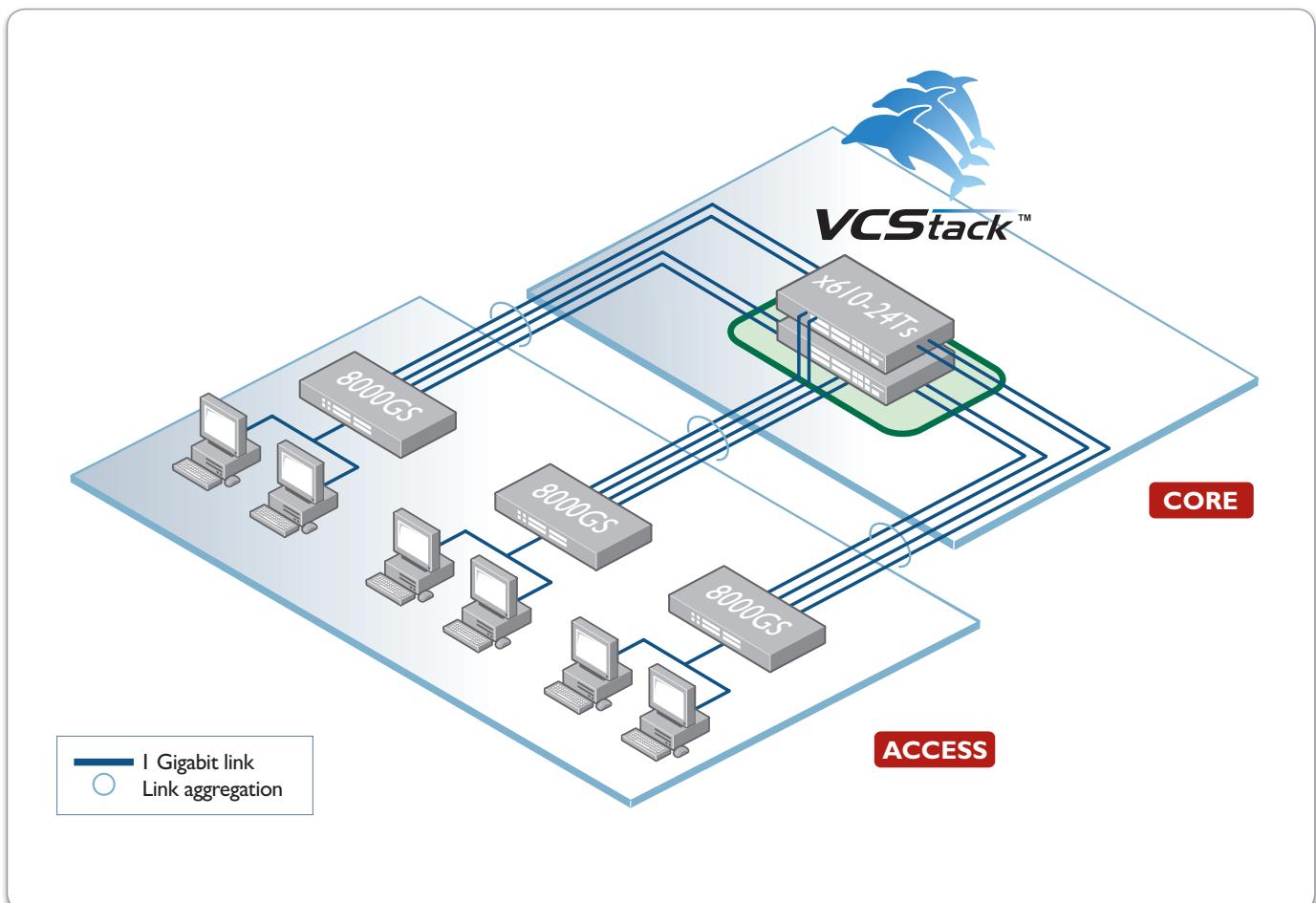
#### Features:

- » Almost entirely non-blocking
- » Gigabit to the desktop
- » Configurable as L3 at the edge or L3 at the core
- » Strong Security at the edge
- » High speed core (160Gbps stacking bandwidth)
- » High resiliency core with 2xPSU per core switch
- » Pay-as-you-grow by sliding new 10-gig modules into core when required

#### Applications:

- » Data Centre
- » Hospital
- » Enterprise with high LAN bandwidth requirements

# Option 2: Cost effective gigabit to the desktop



Option 2: Cost effective gigabit to the desktop

#### Product combination:

- » AT-8000GS/24 at the access layer
- » AT-x610-24Ts virtual chassis core

#### Connectivity:

- » Aggregated quads of 1-gigabit links from Access to Core

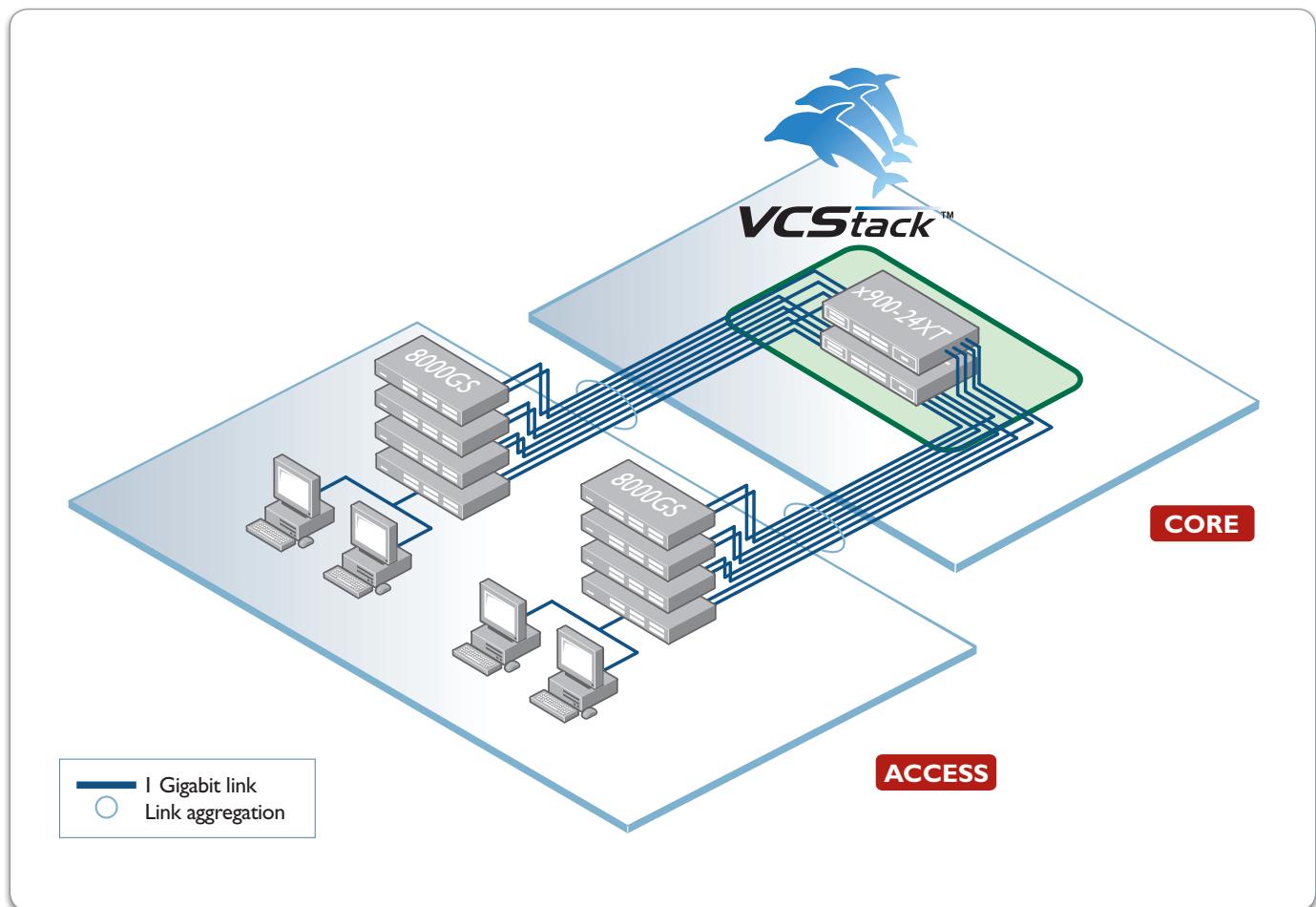
#### Features:

- » 5-to-1 blocking ratio
- » Gigabit to the desktop
- » Strong security at the edge
- » PoE option
- » Medium speed core

#### Applications:

- » Enterprise with medium LAN bandwidth requirements
- » Tertiary education department
- » Public administration offices

# Option 3: High density gigabit to the desktop



Option 3: High density gigabit to the desktop

#### Product combination:

- » AT-8000GS/48 at the access layer
- » AT-x900-24XT virtual chassis core.

#### Connectivity:

- » Aggregated sets of 8 x 1-gigabit links from Access to Core

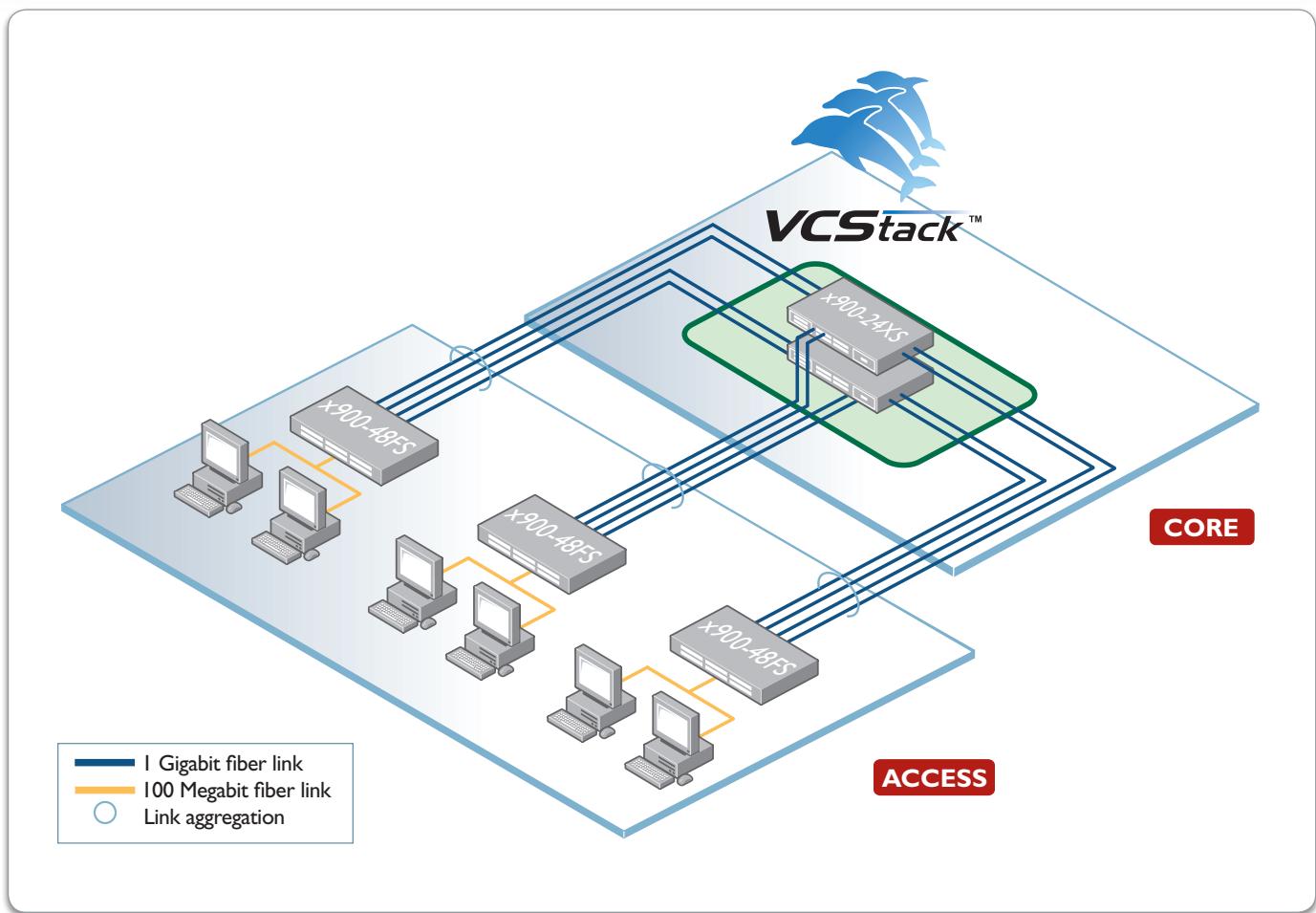
#### Features:

- » Extremely good price per port
- » 24-to-1 blocking ratio
- » Gigabit to the desktop
- » Strong Security at the edge
- » Medium speed core (30Gbps stacking bandwidth)
- » High resiliency core with 2xPSU per core switch
- » Edge and core resiliency

#### Applications:

- » Data Centre
- » Retail
- » Transport hub (Airport and Railway stations etc.)

# Option 4: Fibre to the desktop



Option 4: Fibre to the desktop

#### Product combination:

- » AT-x900-48FS at the access layer
- » AT-x900-24XS virtual chassis core

#### Connectivity:

- » Aggregated sets of 4 x 1-gigabit links from Access to Core

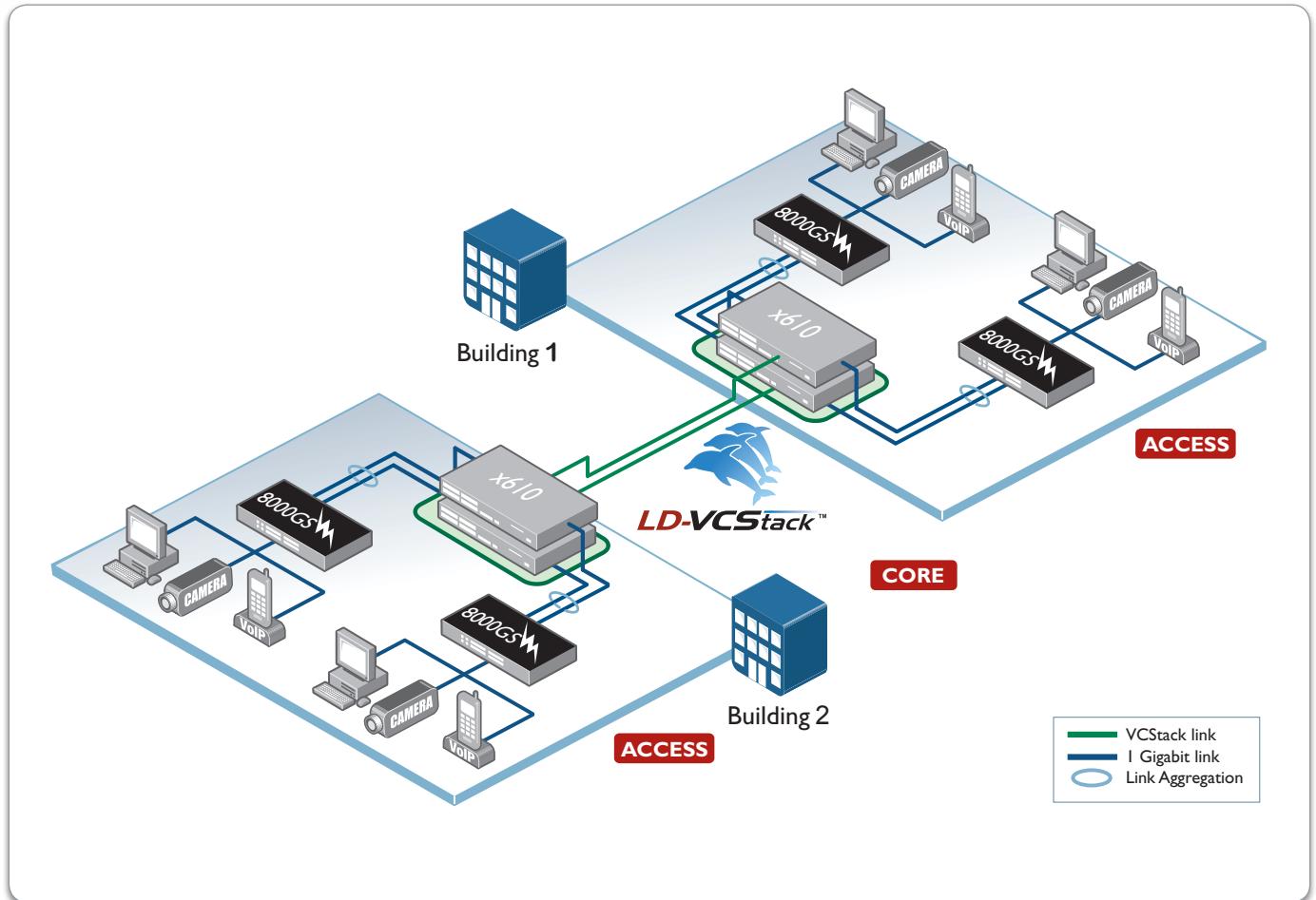
#### Features:

- » High-security fully-fibre network
- » Almost completely non-blocking
- » Strong security and high intelligence (OSPF, PIM etc) at the edge
- » Configurable as L3 at the edge or L3 at the core
- » Industry-leading QoS from End to End
- » High resiliency core with 2xPSU per core switch

#### Applications:

- » High security operation centre
- » Military

# Option 5: Long Distance Stacking



Option 5: Long Distance Stacking

#### Product combination:

AT-8000GS/24PoE at the access layer  
AT-x610-24Ts virtual chassis core

#### Connectivity:

» Aggregated sets of 2 x 1-gigabit links from Access to Core

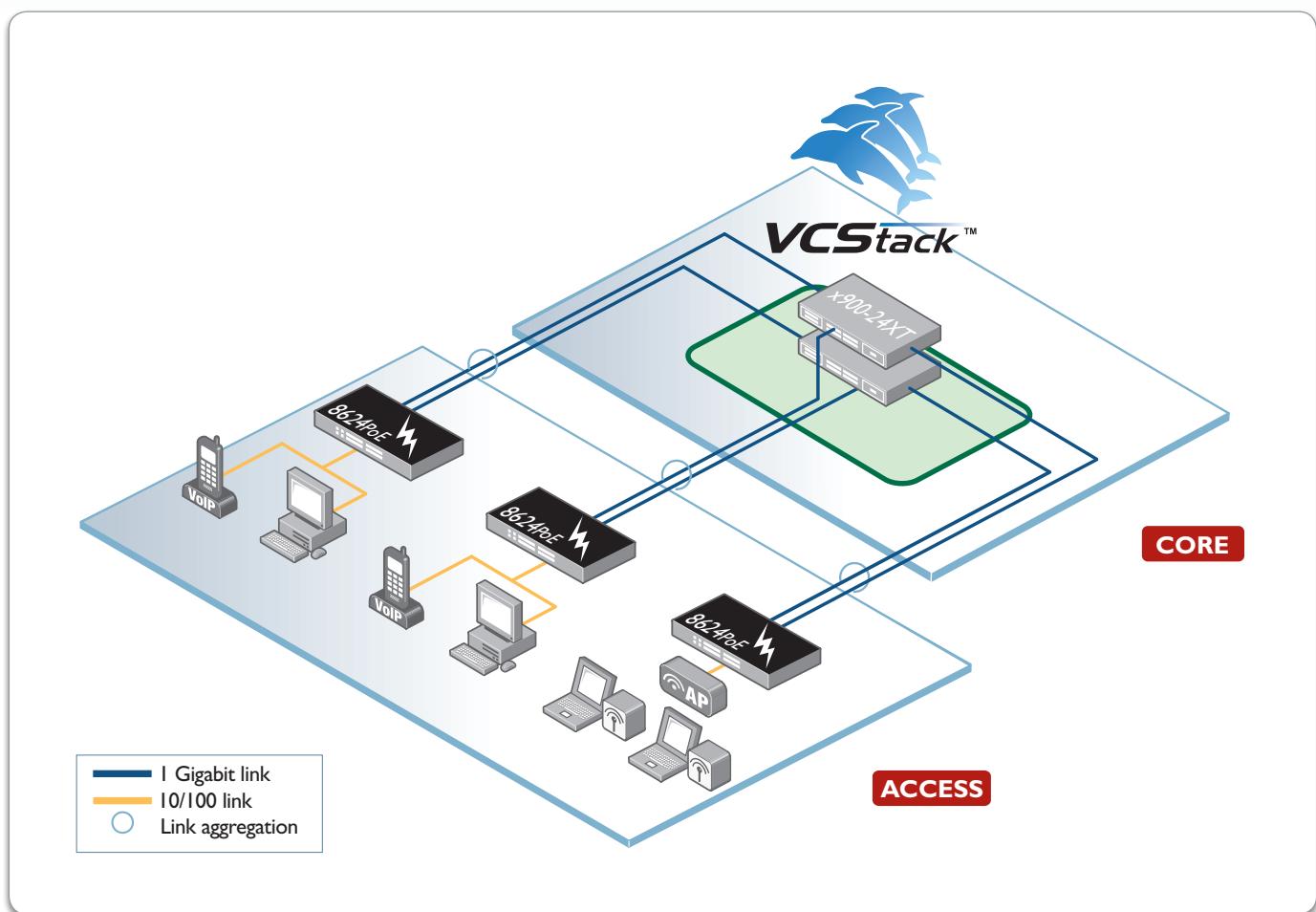
#### Features:

- » Gigabit to the desktop
- » Strong security at the edge
- » Configurable as L3 at the edge or L3 at the core
- » Power over Ethernet (PoE) powering VoIP phones and IP security cameras

#### Applications:

- » Distributed core with LD-VCStack for multi-building campus environment

# Option 6: L3 PoE at the edge



Option 6: L3 PoE at the edge

#### Product combination:

- » AT-8624PoE at the access layer
- » AT-x900-24XT virtual chassis core

#### Connectivity:

- » Aggregated sets of 2 x 1-gigabit links from Access to Core

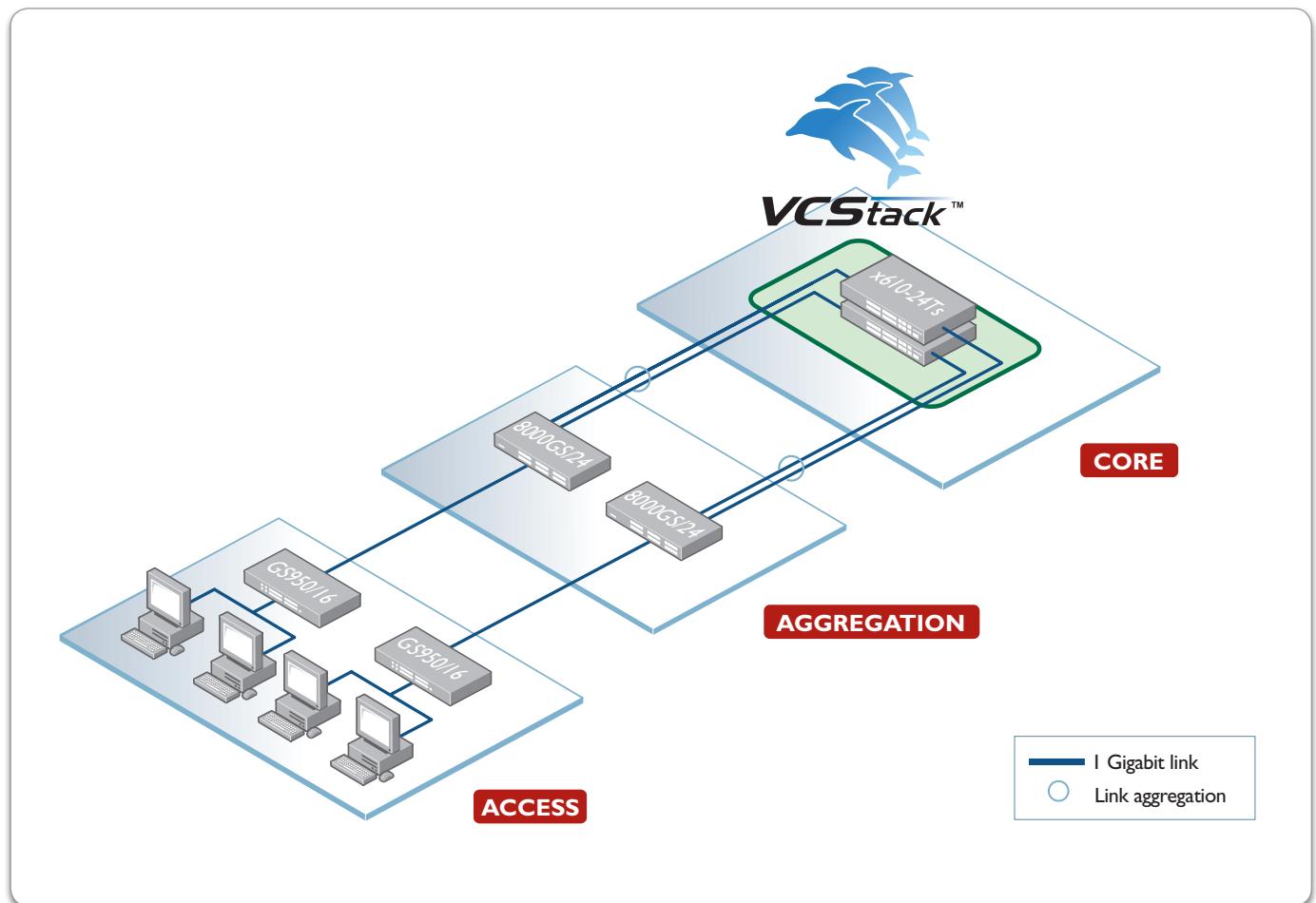
#### Features:

- » Almost completely non-blocking
- » Strong security and high intelligence (OSPF, PIM etc.) at the edge
- » Configurable as L3 at the edge or L3 at the core
- » Power over Ethernet (PoE)
- » High resiliency core with 2 power supplies per core switch
- » Highly configurable, cost-effective PoE network

#### Applications:

- » PoE surveillance camera installation

# Option 7: Extremely cost-effective networking



Option 7: Extremely cost effective networking

#### Product combination:

- » AT-GS950/16 at the access layer
- » AT-8000GS/24 at the aggregation layer
- » AT-x610-24Ts virtual chassis core

#### Connectivity:

- » Single gigabit links from Access to Aggregation
- » Aggregated sets of 2 x 1-gigabit links from Aggregation to Core

#### Features:

- » Secure, resilient, manageable, intelligent, future-proof network at a very good price. Good value without sacrificing network quality.
- » Strong security close to the edge
- » Resilient Aggregation-Core design
- » Configurable QoS, Multicasting, etc
- » Fully gigabit
- » Simple to expand and upgrade
- » PoE options available

#### Applications:

- » Primary and Secondary educational institutions
- » Cost-conscious public or private sector operations

# Summary

The 7 examples above have just scratched the surface of the full set of possible product and connectivity configurations in which the Allied Telesis resilient network solution can be deployed. They demonstrate the broad range of applications which the Allied Telesis Enterprise switch range can support with cost-effective, secure, flexible LAN installations.

Allied Telesis provides the products and solution framework to help you build the network you really need.



## x610 Series

### ADVANCED LAYER 3 GIGABIT ETHERNET STACKABLE SWITCHES

The Allied Telesis x610 series is the high performing and scalable solution for today's networks, providing an extensive range of port-density and uplink-connectivity options. 24-port and 48-port versions are available with optional 10 Gigabit uplinks and PoE+ ports. The ability to stack up to eight units includes using fiber for long distance stacking. The x610 Series can connect anything from a small workgroup right up to a large business.



## SwitchBlade® x908

### ADVANCED LAYER 3 MODULAR SWITCHES

The Allied Telesis SwitchBlade™ x908 advanced Layer 3 modular switch offers high flexibility and port density in a small physical size, providing scalable and versatile switching solutions for today's Enterprise networks. Each chassis supports eight high-speed 60Gbps expansion bays, and can also be paired in a VCStack.



## x900 12 & 24

### ADVANCED LAYER 3 SWITCHES

The x900 Layer 3+ switches have high-speed 60Gbps expansion bays which provide a high level of port flexibility and application versatility unmatched by any other IRU Gigabit Ethernet switch on the market. The expansion modules can be used in a variety of configurations to provide tailored solutions that meet wide-ranging physical networking requirements. Multiple units can form a Virtual Chassis Stack with the XEM-STK expansion module.

# Products



## x600 Series

### ADVANCED LAYER 3 GIGABIT STACKABLE EDGE SWITCHES

The Allied Telesis x600 series is an advanced series of stackable switches providing high performance, flexibility and reliability. The x600 series provides high levels of Network Access Control (NAC) security making them ideal for the entry point into a corporate network. High speed 10Gbps uplinks and high speed stacking of up to four switches ensures excellent performance, while optional redundant power supplies can ensure network availability.



## AT-GS950 Series

### GIGABIT ETHERNET SWITCHES

The Allied Telesis GS950 Websmart Switch Series is a cost-effective Gigabit Ethernet switch that allows configuration by Web browser and local RS232. This Gigabit Ethernet switch is an excellent alternative to SNMP managed devices in systems designed for information workers. The Websmart series supports Quality of Service and packet prioritization. Use the GS950 Series to transport voice, video and data over the network.



## AT-8000GS Series

### GIGABIT ETHERNET SWITCHES

The Allied Telesis 8000GS Series Gigabit Ethernet switches are low-cost, managed and stackable. They are IRU high and rack mountable. Some switches in this series have optional PoE.



## AT-8600 Series

### LAYER 3 ETHERNET SWITCHES

The Allied Telesis 8600 Series of Fast Ethernet Layer 3 switches offer a high level of security and traffic control at the edge of your network at a reasonable price. This series of switches provide full routing capabilities and support RIPv2 and OSPFv2. PoE options are available.

## **About Allied Telesis Inc.**

Allied Telesis is a world class leader in delivering IP/Ethernet network solutions to the global market place. We create innovative, standards-based IP networks that seamlessly connect you with voice, video and data services.

Enterprise customers can build complete end-to-end networking solutions through a single vendor, with core to edge technologies ranging from powerful 10 Gigabit Layer 3 switches right through to media converters.

Allied Telesis also offer a wide range of access, aggregation and backbone solutions for Service Providers. Our products range from industry leading media gateways which allow voice, video and data services to be delivered to the home and business, right through to high-end chassis-based platforms providing significant network infrastructure.

Allied Telesis' flexible service and support programs are tailored to meet a wide range of needs, and are designed to protect your Allied Telesis investment well into the future.

For further information visit us online at [alliedtelesis.com](http://alliedtelesis.com)



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